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FARMERS' DIARIES

THEIR INTEREST AND VALUE AS HISTORICAL SOURCES¹

This Nation has been predominantly an agricultural country for the greater part of its existence. Since most of its early inhabitants, at least, gained their living by tilling the soil, a history of the American people should have as its central core the history of American agriculture. This history remains to be written. And when it is written, it must be based on sources as yet little touched by the research student. An outstanding authority on American agricultural history has said:

The importance of preserving farmers' account books, diaries, letters, and reminiscences for the use of research workers is being realized increasingly. Of similar significance are country-store account books, mill records, old farm periodicals and rural newspapers, pamphlets, reports and programs of agricultural societies, and pictures of all phases of rural life. These commonplace documents of the past are the necessary sources of the information used by historians and economists in making analyses of our past agricultural and economic life.

These materials supply research workers with many facts not obtainable elsewhere. They furnish data indicating the course of farmers' standards of living; they show the influence of the competition of various agricultural sections, the changing conditions and wages of farm labor, the ups and downs of various systems of farm management, and the trend of crop acreages. They afford figures on the cost of fertilizers, machinery, twine, and other supplies and information on yields, disease epidemics, the dates of the introduction of new varieties and breeds, and new cultural practices.²

The Minnesota Historical Society is fortunate in having not only a relatively large number of farmers' diaries, but also a

¹ A paper read at a meeting of the Minnesota Historical Society at St. Paul on Apr. 12, 1937. Originally printed with the title "Some Sources for Northwest History; Minnesota Farmers' Diaries" in *Minnesota History*, 18:284-297 (September 1937), the paper is here reprinted in substantially the same form with the permission of the editor and the author.

² Everett E. Edwards, "Farmers' Account Books, Diaries, Etc., Are Often Valuable Research Aids," in U. S. Department of Agriculture, *Yearbook*, 1932, p. 197.

number of farmers' account books, letters, and memoirs. The present article is based only on material found in the farmers' diaries and is limited to the period preceding 1885. Since diaries for northern Minnesota are not now available, this study is further limited to the southern part of the State. Although the specific statements and illustrations relate, therefore, to the pioneer period of a limited geographical region, it is believed that the generalizations derived therefrom are sufficiently applicable to emphasize the interest and value of farmers' diaries as a historical source for general American agricultural and social history.³

The weather, that stock topic of conversation, received constant notice in the diaries of Minnesota farmers. Nearly all the entries contain a record of the weather, and often the daily variations in temperature and the direction of the wind are given, even when there is little else. "I have made entries of each day," John R. Cummins wrote in 1855, "more though of the weather than of other things, because having determined, so to make entries, the weather, though possessing little interest compared with other things, yet still has some; and my own doings, on a farm, possessing still less, I was necessari[t]ated as it were, to confine myself to that topic."⁴

For most farmers this interest in the weather was not just curiosity or an effort to lay up a stock of conversational material; it was a demonstration of the great concern which every farmer had in that most important and incalculable factor of farm life. In the winter a sudden, heavy snowstorm might block the roads, prevent the mail from getting through, and keep the farmer from hauling wood, grain, or ice. On February 5, 1884, Allen W. Dawley recorded: "Snowed nearly Six inches last night making nearly 2 feet on the level. Day fine and clear, towards night indications of more Snow Took most of the day to dig out and

³ For articles relating to similar sources, see Everett E. Edwards, "References on Agricultural History as a Field for Research," U. S. Department of Agriculture, Library, *Bibliographical Contributions* 32 (Washington, 1937).

⁴ Cummins Diary, Dec. 31, 1855. Cummins lived at Eden Prairie, in Hennepin County.

then did not more than half do it." Two days later he wrote: "Snow getting so deep it is difficult to get around and consequently do not do much but chore and do not do that very Well." Sometimes a sudden thaw prevented the farmer from hauling farm produce by making the roads impassably muddy. If spring came late, plowing and seeding were retarded, and late frosts sometimes injured tender crops. Cold, wet summers blasted the grain crops, injured the hay, and slowed up the growth of corn; a drought could be a calamity, and, if accompanied by wind, might even result in a "dust blizzard." But it was during the grain harvest, and this was especially true before the use of the string binder, that the farmer worried most about the weather. Cutting grain with a cradle was a slow, laborious task, and even after the advent of the reaper there was still the job of binding the grain by hand. Under these conditions a hard, sudden rain might find the unbound grain lying on the ground and drive the heads into the soft soil, where it sometimes sprouted before it could be rescued. On September 1, 1875, Dawley wrote: "Rained hard the most of the night. Cleared off today and looks as if we might have some pleasant weather. Grain in bad condition Get [sic] some of it out to dry. Unless it stands up straight and well capped it is thoroughly soaked. Some of it has commenced to grow."⁵ Sometimes a rain wet a half-built stack of grain so that it was necessary to dry out the sheaves and rebuild the stack. Through the vagaries of the weather, as the diaries show, the pioneer farmers frequently were forced to face such misfortunes.

Ordinarily, the diaries are of small literary value. Written probably just before bedtime by the light of an oil lamp or a candle, recording the labors of a regular, uneventful existence, they are a running commentary on the day's work and the weather, careless in spelling and punctuation, but withal a surprisingly faithful record. Occasionally, however, a diarist shows some literary skill, as, for example, Mitchell Y. Jackson.

⁵ Dawley Diary, Sept. 1, 1875; Feb. 5, 7, 1884. Dawley settled at Smithfield, in Wabasha County.

The first of the following extracts from his diary was written in 1856 on his fortieth birthday:

The stream of time flows with accelerated velocity as we grow older. Forty Years! How long when looked at from the head of the stream and yet how short when viewed from the other end. How vividly and how indellibly is impressed upon the tablet of our memory all the windings and riplings and little eddies of the miniature stream of our childhood.

In the second, Jackson recalls, after his removal to Minnesota, the maple sugar camps of Indiana:

But we have no sugar making here. No making of sugar troughs—spiles—furnaces camps etc. My boys will know nothing of the pleasant excitement of the hurry & bustle of the "sugar-making." Sugar camps are perhaps the strongest marked localities of my boyhood. . . . And now at this distance I can almost smell the smoke and see the blazing fire as it used to shine upon the huge forest trees through the thick black darkness of an Indiana sugar-making night. With equal distinctness can I see the pearly drops and hear the peculiar trickling of the sacharine fluid as it flows from the spiles upon a bright, frosty, sunshiny morning—such as this.⁶

Occasional bits, such as these, color and enliven the diaries, but they are all too few. Lack of color, however, does not detract from their historical value. What they lack in literary value they gain in objectivity. Through their medium farming operations can be traced day by day. In the winter months the farmer cut, hauled, and split firewood, rails, and posts, butchered a hog, cleaned out the stable, hauled manure to the fields, or filled the icehouse. Concerning the last task one farmer noted: "They manage to get out ice here in quick time cut it in long cakes and hitch horses to it, which can pull out pieces 2 ft wide & 10 to 14 ft long."⁷ Winter's blanket of snow furnished easy traction and made possible the drawing of heavy loads of grain, wood, or ice on sleds. During severe cold spells, or when the snow was too deep for ordinary tasks, the farmer's work was confined to the barn, where he threshed grain or beans left over from the fall months, or made wheelbarrows, ax handles, and ox

⁶ Jackson Diary, Apr. 13, Aug. 10, 1856. Jackson's farm was in Lakeland Township near Lake St. Croix.

⁷ Cummins Diary, Feb. 4, 1858.

yokes. Occasionally he tracked deer over freshly fallen snow or fished through the ice on the lakes.

In the month of March, which was often half winter and half spring, the farmer chopped firewood, made and mended tools, planted garden seeds in hotbeds, plowed perhaps, but more probably fretted about the late spring. Some farmers tapped maple trees for syrup, but this operation was not always successful, since the neighborhood boys had a way of boiling down the sap on the sly and eating the maple sugar. April and May were occupied with planting operations. The farmer sowed a variety of crops: wheat, oats, barley, rye, corn, broomcorn, sorghum cane, hay, and garden vegetables from beets to turnips, and he set out apple trees and strawberry plants. Corn plowing and vegetable cultivating occupied most of June and the early part of July and kept the farmer engaged in a constant battle with weeds, cutworms, and potato bugs. Apparently some of the most troublesome weeds were brought in by the settlers. "It is strange how fast weeds have spread in this country," Cummins wrote in 1857; "only settled five years, and now, wild buckwheat and barn grass cover whole fields." To the early settlers grasshoppers were a greater danger than weeds. "During this month without doubt they did the most mischief," wrote Cummins in July 1857. "Wheat fields that previously looked middling well though damaged considerably in a day or two, would over large pieces, in many places the $\frac{1}{2}$ or three fourths, would be actually leveled with the ground, and eaten all up. In the corn fields they would eat off stocks 8 or 10 feet high, and after it fell clean it all up."⁸ Fortunately these pests did not remain all summer, but flew away about the middle of August.

The harvest season lasted from the middle of July until perhaps the first of September. It was a time of hot and strenuous work, with ripe hay and grain needing to be cut and shocked or stacked. This was the time when bad weather might ruin the farmers' hopes for successful crops—days with much to do and scarcely enough time to accomplish all. In September and October the

⁸ *Ibid.*, Aug. 27, 1857; memoranda, 1857.

farmer was hardly less busy. Grain needed threshing and the early threshing machines did not always work satisfactorily. One farmer noted in 1868: "Threshed out 240 bus. of wheat, a small days work indeed a good deal of time lost by breaking" of the threshing machine.⁹ Besides threshing grain, the farmer had to cut and shock or husk corn; dig or gather beans, hops, grapes, squash, pumpkins, and potatoes; and pick garden seeds. He hauled loads of grain and vegetables to town, and while there, he often attended an agricultural fair. The house was banked with dirt and straw in November and preparations were made for the winter. Supplies were hauled from town and plowing, threshing, and cornhusking were carried forward. The cold days of December brought butchering, wood chopping, and deer hunting. Thus, farming operations can be followed through the year.

The diaries tell something about agricultural tools and implements. The tools that the pioneers used in the forties were for the most part homemade. Except for the prairie plow and the ax, the farmer had to purchase few of his implements in the outside world. With his ax he fashioned sleds, harrows, rollers or drags, wagon boxes, whipstocks, oxbows, and yokes from white oak or ash. From the neighboring blacksmith he got shoes for his oxen, pitchforks, and perhaps scythe blades. His grain was cut with a cradle, threshed with a flail or by the hooves of oxen or horses, and winnowed by the wind. At a nearby mill the grain was ground into grist or flour. The farmers of the forties found markets for their products at Fort Snelling and on the steamboats that carried their supplies.

The settlers who came in the next decade brought a variety of tools with them. The appearance in the middle fifties of the threshing machine, motivated by horsepower, made the flail unnecessary, except for flax. Even in the late sixties the flail was used to thresh flaxseed. In 1869 Cummins wrote: "at work on the flax threshing with a flail but it does no[t] pay. We threshed only two bus. about 48 sheaves make a bus. or

⁹ *Ibid.*, Sept. 11, 1858.

about twice as much as wheat." The next day, tired of the flail, Cummins reverted to an older practice. "At work treading out flax with the horses We got about 10 bus. today. much better than with a flail." A reaper mentioned as early as 1856 was surprisingly enough of the self-rake type, but reapers and mowing machines were not common until the Civil War years. Even as late as 1865 the owner of one machine traveled about reaping his neighbors' grain for a dollar an acre without horses or a dollar and a quarter an acre if he furnished both horses and reaper.¹⁰

Jackson contrasted methods used in 1860 with those followed in his boyhood.

Commence the new harvest by cutting my Rye The old familiar clatter of the reaping machine sounds quite natural Though there is nothing about it that reminds me of harvest as conducted in the days of my boy hood. Then the old simple crooked sickle then the more formidable looking cradle were the only implements known. Now the machine drawn by 2 or 4 horses cuts its throng of four to six feet as fast as the team can walk. and from four to six men are busy binding and setting up the sheaves.¹¹

The reaper, however, did not entirely displace the cradle for a generation. In the eighties it was a common practice to cut several swaths around the edges of a grainfield with a cradle before entering with a reaper.

A study of the diaries shows that the reaper was beneficial to the farmer in two important respects—it made him less dependent on long stretches of good weather in harvest time, since the grain could be cut much more quickly; and it made possible an increase in the size of grainfields. Of course other factors enter into the causes for the increase in the size of fields and plantings—railroads and the growth of markets, for example—but much of the increase was made possible by the introduction and subsequent improvement of the reaper.

The diaries offer occasional bits of information about the prices of farm lands, both in the West and in the East. Although

¹⁰ *Ibid.*, Nov. 26, 27, 1869; Francis B. Larpenteur Journal, July 12, 1856; Dawley Diary, memoranda, 1865. Larpenteur's farm was near St. Paul.

¹¹ Jackson Diary, July 13, 1860.

available data are scanty, it seems likely that land prices varied according to the time, place, kind of land, and number of purchasers, and that expensive land in the East and cheap land in the West led to the migration of many persons from the Middle Atlantic States, particularly Pennsylvania and Rhode Island. In 1857 some Minnesota land was selling for fifteen dollars an acre, while in Pennsylvania land "along the Delaware has been selling for rather high prices. Some of it having brought 500 dollars an acre."¹²

The prices of farm produce and farm supplies are frequently mentioned, and the fall in the prices of grain after the harvest and their gradual rise about the beginning of each new year to a culminating point usually in June can be traced. The effects of panics and the impact of a depression or a wartime inflation upon farm prices and income can be followed. The panic of 1857 was felt in Minnesota by October of that year, and by January 1858, money was so scarce that farmers had to resort to barter. By September 1858, however, it was said that: "Times are on the mend when money is so plenty, that buyers will come up the [Minnesota] river for produce." A year later things were different. Wheat and oats which had sold for a dollar and a half a bushel in June 1857, were selling in August 1859, for fifty and fifteen cents respectively. "At such prices," one farmer complained, "it is about useless to try to farm." Later he remarked that "What with failure of banks, hard times and so on, things are about used up in this country at present; it is almost impossible [to] get any money."¹³ Thus the farmer described economic conditions, good or bad, and they were frequently bad.

Some of the reasons for the enmity of the farmer for the middlemen and the towns, which developed later into the Granger and Populist movements, can be found in the diaries. In 1857 a farmer noted: "The store keepers in the west are generally a little more giving to asking more than the value of an article than they would take; but it is the case more or less everywhere."

¹² *Ibid.*, Jan. 25, 1857; Cummins Diary, Mar. 3, 1857.

¹³ Cummins Diary, Sept. 15, 1858; Aug. 26, Nov. 17, 1859.

And again: "The store keepers work a game here [*in Minneapolis*] not very profitable to the farmer. They will tell a farmer so and so sold potatoes at so much, and you must or we wont buy." In 1859 the following was recorded: "To give an idea how the lumberman cheat[s], for 1500 feet, I had only 1300." Here is another similar complaint: "Went to town with a load of flax. it lost a good deal in weight by some means." Such incidents as these deepened the distrust of the farmers for the townsmen and the moneyed interests. The farmer was only infrequently in a position to bargain, but on one memorable occasion a farmer reported: "Wheat is quite high; there being so much opposition between the Minneapolis buyers and Duffy of Shakopee, the price is ten to 20 cts higher than at Minneapolis some days running, it up to 170."¹⁴ Generally the farmer felt himself at the mercy of the town buyer or seller who only too frequently took advantage of his superior position and knowledge.

The farmer's social life revolved to a large extent around the schoolhouse. With its adjoining lot, it functioned as polling place, caucus hall, public forum, clubhouse, church, funeral parlor, theater, and picnic ground. It was quite natural that the schoolhouse should be variously used by the community, since it was the sole public meetinghouse in the neighborhood—at least, until a church was built—and many of the farmer's amusements had an educational tinge. For instance, lyceums were held at the schoolhouse. The lyceum program usually consisted of a paper on some subject of general or educational interest, followed by a debate. On February 24, 1856, Jackson reported that he "attended Lyceum at Lakeland last evening. had quite an interesting meetings of Gents & Ladies. Question Is the Liquor dealer the biggest scoundrel in the world. Affirmative carried."

Singing meetings, spelling bees, Sunday school festivals, temperance meetings, dramatic entertainments, panorama shows, and Christmas celebrations with community trees were all held in the schoolhouse. The last day of school, usually early in March, was a day of open house to parents. Dawley, who was

¹⁴ *Ibid.*, Apr. 4, Aug. 29, 1857; Sept. 20, 1859; Oct. 9, 1867; Dec. 8, 1869.

a schoolteacher as well as a farmer, described one of these occasions: "School closed today & quite a crowd of visitors were in in the afternoon & quite a number of pieces were Spoken by the Scholars and we had a first-rate time Wound up by having a Spelling School in the Evening."¹⁵ On July 4 a picnic was usually held at the schoolhouse. A speech or a reading of the Declaration of Independence was followed by a dinner, and then part of the audience adjourned to the baseball field.

The farmer had other means of recreation besides those connected with the schoolhouse. Library associations were formed as early as 1856, and books, magazines, and newspapers were far from unknown on the farm itself. Some of the newspapers and magazines that the farmer read were the *Daily Pioneer and Democrat* of St. Paul, the *Weekly Herald* and the *Weekly Tribune*, both of New York, the *Fireside Companion*, *Harper's Monthly Magazine*, and the *American Agriculturist*. In 1856 a club was formed at Lakeland to subscribe to the *Northwestern Farmer and Horticultural Journal*.¹⁶ Farmers' clubs are mentioned in 1856 and agricultural societies, in the late sixties, but the Grange is not mentioned until 1874. What went on in these clubs is not recorded. They may have been partly political; certainly the Grange was.

Not all the social life of the farmer was as serious and educational in its objects as the above may suggest. Among other amusements in which he indulged were euchre, "pea Nuckle," backgammon, parchesi, chequers, and croquet. There were dances in the homes, and recreation for all members of the family was offered at candy pulls, parties, sewing and quilting bees, housewarmings, ice-cream festivals, and sleigh rides, or in skating, berrypicking, hunting, fishing in summer and winter alike, and swimming. By 1856 fairs and "Young Ladies Grand Exhibitions" were held, and when the State fair came, there was horse-racing. As early as 1857 a circus came to St. Paul. Ten years

¹⁵ Dawley Diary, Mar. 4, 1870.

¹⁶ Edward B. Drew Diary, Apr. 13, 1858; Henry C. Fridley Diary, Feb. 2, 1867; Dawley Diary, Jan. 25, 1866; Nov. 25, 1867; Sept. 5, 1876; Jackson Diary, Dec. 14, 1856. Drew resided in Winona County and Fridley, in Anoka County.

later at least one farmer attended a baseball game between teams from Minneapolis and St. Paul. St. Paul won, but the score was not recorded. Professional theatrical entertainments, with such plays as "Uncle Tom's Cabin" and the "Union Spy," were running in St. Paul in the decade following the Civil War. The social amusements of the farmer, however, for the most part depended upon his own efforts.

Two things in the attitude of the frontier prairie farmer toward religion can be noted in the diaries. One was the leveling effect that the frontier had upon sectarianism. Jackson wrote in 1855: "It also seems pleasant to witness the studied concealment of sectarian names." The other was the tenacious hold that the farmer maintained upon certain common religious symbols, such as refraining from work on Sunday and assembling for common worship. Pastors were scarce in the early days, but their absence did not prevent services from being held. Cummins wrote in 1868: "Went to church but there was no preaching the other services were not very interesting." Although the pastor's cash income was pitifully small—one minister is reported in 1856 to have received but seventy-three dollars a year—it was undoubtedly supplemented by gifts in kind. In return the pastor was expected to preach an acceptable sermon. The farmer was not slow to criticize the sermon or the services. One or both might be too long. If he had words of praise for the "eloquent" Bishop Whipple, he could also dismiss another sermon as "nothing extra," or even make a more caustic comment, such as this: "Went to church, preaching by Bible agent minister but not much good in him by appearance, false pair teeth and eye brows."¹⁷

The subject of politics is generally dismissed with a comment such as this, made in 1876: "Put in a good honest vote for Hayes & Wheeler." Sometimes the comments take a sharper form. Jackson wrote in 1857 that the new State constitution "allows all whitemen that have been here 10 days to vote. And the way the 'dear Irish' are marched up to vote the *Dimmicratic*

¹⁷ Jackson Diary, June 24, 1855; Cummins Diary, July 20, 1856; Sept. 6, Oct. 4, 1868.

ticket is a sin against heaven & earth. . . . I think there were from 50 to 100 votes polled here by persons having no interest in the affairs of Minnesota." Another diarist remarked in 1862: "Staid in town and went to the republican convention; there is a good deal of rascality going on in a Political meeting." Local politics get a little more attention than national affairs, but the comments are usually sparing of information. A delightful exception is the following: "Good news from Election Wabasha ahead on the Co Seat by 2000 votes Wab cast 4158 votes Pretty well done considering it contains only about 1500 inhabitants."¹⁸

The diaries tell little of the life of the farm wife and the conditions under which she labored. Although she was usually kept out of the fields, in times of great necessity she might do a man's work. One farmer recorded: "Olive plowed and I worked on my pasture fence." And on another occasion: "Commenced to Stack Olive helped me."¹⁹ The farm wife's usual work was carried on in the house and the barnyard. She made hard and soft soap, put up preserves and pickles, made strawberry shortcake, and on Thanksgiving Day prepared a turkey or a feast of oysters, sausages, mince and pumpkin pies, cake, and sauce. The piano was not unknown on the farm in 1856, and the sewing machine was a possibility fifteen years later. Screen doors were available by 1881, and papered walls and washing machines were on the farm by 1885. On the whole, however, the entries covering the activities of the farm wife are surprisingly few.

The diaries are useful for a study of prices, both of farm products and farm supplies. By recording the goods which the farmer bought, they furnish clues to his standard of living and show a gradual rise in the level of comfort of farm life. Varieties of crops and their yields, new crops and their usefulness, and the weights of livestock are sometimes recorded. A mass of incidental information, also, such as the cost of railway transportation and the names of steamboats, can be found in the diaries.

¹⁸ Jackson Diary, Oct. 13, 1857; Cummins Diary, Sept. 20, 1862; Dawley Diary, Nov. 13, 1867; Nov. 7, 1876.

¹⁹ Dawley Diary, May 15, Aug. 13, 1885.

There are obvious limitations upon the value of farmers' diaries to the historian. The entries are usually short and are confined to comments on the day's labors, and the farmer's milieu is described casually, if at all. The entries give comparatively little information about the breeds of livestock and the varieties of grains that the farmer raised, his shifts from one breed or crop to another, and his reasons for making them. The diaries ignore the things that the farmer took for granted—his clothes, the interior of his house, his tools, his wife. All in all, however, there is a surprising amount of valuable historical material in farmers' diaries, not only for the history of farm life alone, but also for other phases of American history. The diaries convey to the reader something that is difficult to transfer to any account of them: the atmosphere of farm life, an appreciation of its struggles, hopes, and defeats. Those who are interested in the history of the great agricultural States and regions are deeply grateful to the farmers who faithfully recorded their day-by-day observations in diaries. It is hoped that records of this nature will be brought to the attention of historians, and, if in private hands, to the attention of depositories which are specializing in this kind of material.

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THE EARLY FORESTRY MOVEMENT IN THE UNITED STATES¹

In the United States practically all of the concrete accomplishments in applying scientific principles of forest management have been achieved within the last forty years.² There was, however, something known as forestry which received a great deal of attention during the last quarter of the nineteenth century. It consisted, for the most part, of a gradual growth of public sentiment in favor of preserving the forests and a groping to discover a practicable course to pursue.

This build-up of sentiment, the reasons for it, the play of forces which entered into it, and the measures which it proposed as means of attaining its objectives are what is meant by the early forestry movement.³ Though it achieved little toward solving the country's forest problem, it has decided historical significance.

Its right to bear the label of forestry has been challenged. This raises some questions of history in the use of words.

"FOREST CULTURE" AND FORESTRY

The word "forestry" entered the English language relatively late. Although both "forest" and "forester" antedate the opening of the fourteenth century when modern English was being born, the first citation under "forestry" in the *Oxford English Dictionary* is dated 1693. The word was then a Scottish law term meaning "the privileges of a royal forest," and from that, "an estate to which this privilege is attached." The next step in the evolutionary process by which the word attained its present significance—whatever that may be—is recorded in the

¹ A revision of the author's address before the Agricultural History Society at Washington, D. C., on Apr. 19, 1938.

² Gifford Pinchot, "How Conservation Began in the United States," *Agricultural History*, 11:255-265 (October 1937) emphasizes that forestry was non-existent in the United States until the closing decade of the nineteenth century.

Oxford dictionary under the definition, "wooded country; a vast extent of trees," and *all* the citations given under this heading are from nineteenth-century writings.³ Most surprising of all, 1859 is the date of the first quotation recorded under the definition, "The science and art of forming and cultivating forests, management of growing timber."

It was not until the edition of 1864 that *Webster's Dictionary* included the word "forestry." It was defined as "The art of forming or managing forests," and even then the qualification "rare" was added.⁴ However, the rival Worcester's 1860 quarto had anticipated Webster with "Forestry: The art of forming or cultivating forests." Unquestionably the word "forestry" was rare in the early 60's, but this should not be misinterpreted.

The book by George P. Marsh called *Man and Nature*, published in 1864, does not include the word "forestry," but it has a great deal to say about the subject. It has a word for it—in fact, several. The one most often used is "silviculture," but there are occasional resorts to such terms as "system of forest economy." Other writers of the same period used a wide variety of additional synonyms—arboriculture, forest culture, timber culture, tree culture, forest orcharding, forest management, system of management, measures of forest preservation, and so on.

Marsh observed that "The art, or, as the Continental foresters call it, the science of silviculture has been so little pursued in England and America, that its nomenclature has not been introduced into the English vocabulary."⁵ Yet elsewhere, he spoke of England as "the only country where private enterprise has pursued silviculture on a really great scale,"⁶ and in another passage, he asserted:

³ The citations begin with Byron's *Childe Harold* (1823),—"lost amidst the forestry of masts"—and end with Browning's *Ivan Ivanovitch* (1879),—"through forestry right and left."

⁴ The facts and deductions concerning the early American dictionary definitions in B. E. Fernow, *Economics of Forestry*, 448-449 (New York, 1902) are misleading.

⁵ G. P. Marsh, *Man and Nature; or Physical Geography as Modified by Human Action*, 315 (New York, 1864), better known under the title, *The Earth as Modified by Human Action*, as published ten years later.

⁶ *Ibid.*, 292 n.

Evelyn's "Silva," the first edition of which appeared in 1664, rendered an extremely important service to the cause of the woods, and there is no doubt that the ornamental plantations in which England far surpasses all other countries, are, in some measure, the fruit of Evelyn's enthusiasm. In England, however, arboriculture, the planting and nursing of single trees, has, until recently, been better understood than silviculture, the sowing and training of the forest.⁷

The distinction made in this passage between arboriculture and silviculture was not maintained by other writers of the time, either in England or in the United States. In the latter country, everyday usage generally substituted the less bookish terms "tree culture" and "forest culture" and used them interchangeably.

The early thought concerning the means by which forests were to be provided for the future centered on tree planting, and this fact throws light on the vogue of "tree culture," "forest culture," and "timber culture" in the vocabulary of that period. Today one occasionally hears of "cultivated" forests as distinguished from "wild" forests and without any implication of similarity between the processes employed and those of field cultivation, but this usage is almost in the nature of a figure of speech. It is now well understood that the practice of forestry is primarily a matter of continuous management of existing forests, with dependence chiefly on natural reproduction, not tree planting, for replacement of the stand. In strong contrast were the ideas of sixty years ago.

For a long time, forebodings of an approaching shortage of available timber supplies and anxiety over the consequences of accelerating forest destruction had found expression. Those who sought a remedy nearly always advocated planting and were imbued with the "culture" idea. Accounts from Continental Europe of the conditions which had resulted from over-cutting and forest abuse that followed the French Revolution were a powerful additional stimulus to action. These conditions had given rise to grave problems of erosion and flood control. Through Marsh and others, Americans were made acquainted with the current scientific thought on the continent of Europe concerning forest influences and the evils springing from the

⁷ *Ibid.*, 222-223.

denudation of forested mountainous country. Unfortunately the writings of these men tended to give an exaggerated idea of the importance of artificial afforestation and reforestation and thereby contributed to the false start of the forestry movement, with tree planting as its main concern.

Another stream of influence on American thought came from Great Britain. Although not comparable in strength with that from the Continent, it began much earlier. In England and Scotland, as far back as the seventeenth century, the interest in forestry had been concerned mainly with the practices of tree planting. Evelyn wrote his *Sylva* when the demands of the iron and glass industries were accelerating the diminution of England's forest area and the advance of agriculture. To counteract deforestation, Evelyn sought to increase the interest of landowners in growing trees. This interest continued through the eighteenth century, and when the Napoleonic wars interrupted the overseas trade through which Britain normally met the greater part of its timber requirements, there was a marked renewal of interest in forest planting as a profitable form of land use. With the restoration of peace, the interest that had been stirred by the wartime situation died down, but pride in the maintenance of a beautiful countryside and the customary practices in estate management assured the continued vogue of British "arboriculture."

From the writings of Evelyn's successors came an influence which largely shaped American thought on the practices held necessary for maintaining a forest growth. This influence is illustrated by the kind of attention which the leading encyclopaedias gave to forestry. For brevity, a single illustration must suffice. Not until the tenth edition in 1902 did the *Encyclopaedia Britannica* give the subject a place in its title list. The preceding edition, appearing between 1875 and 1889, treated the subject partly under "Arboriculture" and partly under "Forests, Forest Administration," both articles being by Hugh Cleghorn, an officer of the British-Indian Forest Service. In the second article, he said: "The management of large areas of natural or planted wood-lands is called Forestry or Sylviculture." Yet it is largely

the first article that is devoted to detailed information on actual woods practices.

It is significant that the English Arboricultural Society came into existence in 1852 and the Scottish Arboricultural Society in 1854. Not until 1930 did the latter become the Royal Scottish Forestry Society and not until 1931 did the former become the Royal English Forestry Society.

In Great Britain, the climate made protective forests unnecessary, and foreign commerce with free trade made productive forests seem economically superfluous. It was Empire interests that first brought English recognition of the need for public forestry measures. An organizational beginning was made in India about 1855, and in 1864 a department was set up with Sir Dietrich Brandis as the first inspector-general. Thereafter, the thought on forestry in Great Britain began to draw nearer to that of France and Germany, and presumably this had an effect on the United States.

A SUBJECT, NOT AN ART

During the fifteen years following the publication of Marsh's *Man and Nature* in 1864, the use of the word "forestry" spread amazingly, but usually with a meaning which was not in accord with the dictionary definitions.

- "When Dr. Franklin B. Hough read his paper "On the Duty of Governments in the Preservation of Forests" before the American Association for the Advancement of Science in 1873—notable since it led to the beginning of the work which grew into the Forest Service—he uniformly used the expressions, "systems of management and regulation," "forest culture," and "tree culture," to signify the application of practices of forestry, though twice speaking of schools of forestry.⁸ The *Report* of the Commissioner of Agriculture for 1875 contains an article on "Statistics of Forestry," but it is, in actuality, concerned with forest statistics. Neither in the law of 1876 which provided for the

⁸ Franklin B. Hough, "On the Duty of Governments in the Preservation of Forests," American Association for the Advancement of Science, *Proceedings*, August 1873.

inauguration of Dr. Hough's work in the Department of Agriculture nor in Secretary of the Interior Carl Schurz's notable annual report for 1877 which recommended the application of conservative forest management to all the timberlands of the public domain does the word "forestry" appear. However, in Dr. Hough's *Report upon Forestry*,⁹ submitted in 1877—a report which covers a vastly broader field than "the art of forming and cultivating forests"—it appears repeatedly, sometimes as an adjective in such combinations as "forestry instruction" and "forestry annual" and sometimes with the meaning of forest practices or matters. On the whole, the conclusion seems plain that the word gained its vogue through acceptance as a term for the *subject* of forestry, as an equivalent for forest use or woods practice, or as an adjective. The American Forestry Association was organized in 1875, and the Minnesota State Forestry Association in 1876.

Foresters are inured to hearing—with more or less inward pain at times—lumbermen, legislators, woodsmen, and the general public refer to utilization or protection practices which fall far short of planned forest management as forestry.¹⁰ The professional disposition is to try to put up with what is regarded as a perversion or degradation of the meaning on the ground that language is bound to be used loosely in everyday speech by those who know no better. In this view, they are completely supported by present-day dictionaries. Yet to great numbers of people, the word "forestry" signifies something different from the science and art which it is the peculiar province of the technical forester to apply. That foresters sometimes think of forestry as covering more than either their own or the dictionary definitions is exemplified by a single sentence from a notable work: "*Forest utilization* is the oldest branch of forestry."¹⁰ A far more patent disregard of the restrictions of dictionary English is the freedom with which we of the profession use "forestry" as

⁹ Franklin B. Hough, *Report upon Forestry Prepared under the Direction of the Commissioner of Agriculture, in Pursuance of an Act of Congress Approved August 15, 1876* (Washington, 1878).

¹⁰ W. Schlich, *Schlich's Manual of Forestry*, 1:1 (ed. 3, London, 1906).

an adjective, though none of the leading American dictionaries recognize it except as a noun.

One of my fellow foresters consistently and courageously stands by the dictionaries and insists on "forestal" as the only legitimate adjectival form, and there are others who have had scruples to the point of resorting to such rather forced locutions as "the movement of forestry." Most of us, however, subject ourselves to no such trammels. The *Oxford English Dictionary*, it is true, gives sanction for using "forestry" attributively. Its earliest supporting citation is from the *Atlantic Monthly* for 1881 and reads "forestry, fishing, and farm products,"—not, as we now say, forest products, but forestry products. Yet if we bow to the authority of our American dictionaries, it is wrong to speak of a forestry movement in the United States during the 1870's and 80's, on two counts—first, because there was no forestry in the United States until considerably later, and secondly, because the term "forestry movement" is ungrammatical. The fact remains that during these two decades the word "forestry" came into common use, but with a range of meanings that the dictionary makers have refused to recognize, though it has persisted from the days before planned forest management had begun in this country or people had any clear idea of what it involved. The early forestry movement was inspired by the conviction that something needed to be done to avert the public evils which were believed to threaten through rapid forest destruction. Since it was concerned with forest matters, it was in the language of its day concerned with forestry.

EARLY TEACHING OF FORESTRY

One evidence of the spreading interest in forestry during the 1870's and 80's is the place which it gained in the curricula of institutions of higher education, mainly the land-grant colleges. In his annual report for 1886 as chief of the division of forestry in the Department of Agriculture, Bernhard E. Fernow included the following brief section on "Instruction in Forestry."

There are no schools of forestry in this country, nor are there regularly appointed chairs of forestry in any of the colleges or universities. In some of the agri-

cultural colleges the professor of botany has the title "and forestry" added, but instruction, if given at all, is only incidental. Occasional lectures on forestry subjects have been given at the University of Pennsylvania from time to time, in accordance with the provisions of the "Michaux fund." A conception that forestry is a distinct branch of economics and not identical with arboriculture, or simple tree planting, has not yet found entrance into our institutions of education.¹¹

A footnote indicates that he had just learned that "a forestry school is being inaugurated at Los Angeles in connection with the University of Southern California."

The following year's report puts the matter in a different light.¹² In the interval Fernow had been collecting information on the "Condition of Forestry Interests in the States" through extensive correspondence which evidently gave him, for the first time, a full picture of what the colleges were doing in forestry education. He named the New Hampshire, Massachusetts, Michigan, Missouri, and Iowa agricultural colleges, the New York State Agricultural College at Cornell University, the universities of Pennsylvania and North Carolina, and Yale. The number is fairly impressive, but Fernow had apparently failed to discover that the University of Michigan had inaugurated two courses in forestry as early as 1881. He gave 1874 as the beginning year at Cornell and stated that the work at Yale had been under way, in the form of "a few lectures on forestry and tree culture," since 1873, and though no date is given, "Iowa has been almost, if not quite, the first of our States to engage in the teaching of practical forestry." Apparently the Massachusetts Agricultural College had not been far behind, for Hough's *Report upon Forestry* records the adoption of a recommendation made by the executive committee of that institution in 1876 that "some instruction be given in forestry, both theoretically and practically."¹³ From these facts, it is plain that, beginning about 1875, what was then known as forestry became of sufficiently

¹¹ U. S. Department of Agriculture, *Report*, 1886, p. 182.

¹² U. S. Department of Agriculture, Division of Forestry, *Annual Report*, 1887, p. 97-147.

¹³ Hough, *Report upon Forestry*, 425.

general interest to win a place in the curricula of a substantial number of American colleges.¹⁴

EARLY STATE ACTION FOR FORESTRY

A still more impressive evidence of this interest is the record of State legislation. The States moved well in advance of the Federal Government to inaugurate policies of public ownership for forest purposes. New York created a commission to consider State ownership of the wild lands north of the Mohawk River in 1872, and the beginnings of the present Adirondack and Catskill forest preserves date from 1885.

In the Centennial year of 1876, Colorado was admitted to the Union, and Article 18 of its Constitution contained a remarkable section which reads:

The general assembly shall enact laws in order to prevent the destruction of, and to keep in good preservation, the forests upon the lands of the State, or upon lands of the public domain, the control of which shall be conferred by Congress upon the State.¹⁵

On March 21 of the same year, Congress received a memorial from the constitutional convention of Colorado which enlarged on the thought expressed in the quoted section. The memorial set forth:

That the greatest attention ought to be directed to the preservation and care of those resources upon which the welfare of the people depends. This principle finds an especial application with us as far as our forests are concerned. . . . But the rapid increase of our population, the spread of industries, the building of extensive railroads, the reckless devastation of timber in cutting and transporting it, and the frequent fires—mostly caused by carelessness and often raging for months—threaten soon to destroy our forests. . . . The consequences of such a calamity would be severely felt. . . . Sawmills would have to stop, and smelting-works have to be removed entirely out of our mountains. Many mines could not be worked. . . .

It would be a shame for an intelligent people to look with indifference at such an approaching calamity, and it would be an unpardonable mistake in a wise

¹⁴ See Herbert A. Smith, "Forest Education before 1898," *Journal of Forestry*, 32:684-689 (October 1934), for information on the character of the forestry instruction given at these colleges.

¹⁵ Quoted in Hough, *Report upon Forestry*, 202.

government not to provide in time, whatever may be the sacrifice, against an evil which, when once it overtakes us, can never afterward be remedied, or at least not for centuries. . . .

But . . . we do not possess the full control of the forests in Colorado. By far the greatest part of them is in the hands of the Government of the United States. . . . We think it essential . . . to acquire not only the exclusive control of all the government forests in our mountains, but also at least one-fourth of all the government lands on our plains to use in future times for forest-culture. . . . If the forests of Colorado are left as they now are their fate is sealed. . . .

It may not be out of place here to mention that however wise and beneficial the present system of disposing of public lands may have been when applied to other States and Territories, still its enforcement in Colorado will be injurious not only to us, but will, if persisted in, bring destruction and calamity upon the entire population of the so-called "Far West." Here the climate is dry, and agriculture is impossible without irrigation, however fertile the soil may be; and if ever the prairie should be redeemed and made the home of a dense population, it can only be effected by a combination of irrigation and forest-culture. . . .

In contemplation of the above-stated reasons, this convention respectfully suggests to Congress to put the respective forests and waste forest grounds of all those regions where irrigation has to be used for agricultural purposes under the control of the respective Territorial or State governments.¹⁴

The memorialists stressed the necessity of forest culture to thwart the evils of forest denudation, and it is worthy of note that they spoke of "a combination of irrigation and forest-culture," not irrigation and forestry. They were using the language and expressing the thought of their day.

In 1885 California created a State board of forestry which urged in its first report that all Federal and State timberlands not fit for agriculture should be permanently reserved and placed in charge of National or State forestry officers. Three years later, the legislature adopted a concurrent resolution, asking Congress to stop the disposal of Government lands in California, with a view to their permanent preservation as forest reserves for the protection of the watersheds.

Other forms of State forestry legislation and activity began still earlier. In 1867, Wisconsin inaugurated an inquiry into forest conditions and needs; in 1869, the Maine Board of Agriculture appointed a committee to report on a forest policy for the State; and three years later, a law "for the encouragement of the growth of trees" exempted land planted to trees from taxa-

¹⁴ *Ibid.*, 202-204.

tion for twenty years.¹⁷ Laws offering tree planters either bounties or tax exemption were passed in Minnesota, Wisconsin, Iowa, Missouri, Dakota, Nebraska, and Kansas between 1868 and 1872—all before the first Federal Timber-Culture Act.¹⁸ Forestry bureaus or commissions were inaugurated in a number of States during the 80's. These are merely examples.¹⁷

BEGINNINGS OF FEDERAL ACTION

Additional evidence of the gathering strength behind the forestry movement in the 1870's is found in two pieces of Federal legislation—the so-called Timber-Culture Act of 1873, and the initial appropriation, in 1876, for inaugurating the work that eventually expanded into the Forest Service of the Department of Agriculture. The Timber-Culture Act is significant primarily as one of the results of a tremendous interest in establishing forest growth throughout the regions into which the homesteaders pressed so energetically after the Civil War. In 1873, on the initiative of Hough and after hearing his epoch-making paper, which has already been mentioned, the American Association for the Advancement of Science actively sought to obtain Federal legislation for an agency to investigate the forest problems of the country. Out of its activity came the appropriation of 1876 which authorized the Commissioner of Agriculture to start work on forestry.

DEVELOPMENT OF THE FOREST PROBLEM

The period from about 1876 until 1891 when the President was authorized to set aside forest reservations from the public domain may well be called the middle period of the forestry movement in the United States. As we go further back, the term "forestry

¹⁷ The early State legislation is discussed in detail under the heading, "State Accomplishments and Plans," in the so-called *Copeland Report*, 1:733-842. A more complete title is: "A National Plan for American Forestry: Letter from the Secretary of Agriculture transmitting in Response to S. Res. 175 (Seventy-Second Congress) the Report of the Forest Service of the Agricultural Department on the Forest Problem of the United States," 73 Congress, 1 Session, *Senate Document 12* (serial no. 9740-1).

movement" becomes less and less satisfactory, and we find ourselves really concerned with the history of the interrelationship between the economic and social life of civilized man from the time when he first came to inhabit what is now the United States and the forest into which he thrust himself, profoundly altering it and profoundly influenced by it. At first and for a long time, he impinged upon it without serious thought of the need of doing anything but helping himself to what he wanted without regard to the ultimate consequences, but eventually and gradually he discovered that he must learn to control the life of the forest, through knowledge of its laws, in order to mould and direct it to the end that it may best serve the collective interest.

Very briefly and with broad strokes that do not attempt accuracy, I shall sketch the outline of American forest history as I see it. When the European colonists crossed the Atlantic, they brought their heritage of Old World ideas, practices, and ways of life. Just what this heritage was with respect to the treatment of and attitude toward the forest I do not know adequately, but it must have played a by no means negligible part in determining their initial adjustments and reactions in the form of regulations governing the use of the forest. Far greater in importance, however, as an explanation of the seventeenth-century colonial regulations were the practicalities of the situation.

With wood a prime necessity—the fuel requirements alone being enormous during the long and severe winters—and with meager animal power and roads that were hardly even trails, real wood shortages within practicable distances very soon began to press. Questions of trade led to further regulations. Gradually, as the conquest of the wilderness advanced, the necessity for restricting individual freedom beyond the observance of rights of property disappeared and the early regulatory measures fell into abeyance, and there remained only those against trespass by cutting and fire.

So far as I know, the eighteenth century was for the most part fairly free from anxiety over wood supplies, though there were some local complaints of scarcity and high prices. Both the

forest area and the character of the forest were rapidly changing under the impact of the needs and equipment of civilization. As the century neared its close, evidences of inconvenience reappeared. Statements in the anonymous *American Husbandry* illustrate this point:

Another article . . . is . . . timber which already grows so scarce upon the south coasts [of New England], that even fire-wood in some parts is not cheap; and is forced to be brought from Sagadahock. . . .

Wood grows very scarce near Philadelphia, however plentiful it may be in the remoter parts of Pennsylvania: the first settlers, with the usual foresight of the Americans, destroyed the timber, as if it was impossible they should ever want any; which, with the continued consumption ever since, for building, firing, and by iron works, have so lessened it, that wood is almost as dear at Philadelphia, as it is in some parts of Britain; indeed in winter, firing is one of the most expensive articles of housekeeping in that capital.¹⁸

Among the various premiums offered by the Philadelphia Society for the Promotion of Agriculture in 1791 were medals for "the greatest quantity of ground, not less than one acre, well fenced, producing locust trees growing in 1791 from seeds sown after April 5, 1785, to be of a sort used for posts and trunnels, and not fewer than 1,500 per acre."¹⁹ In the same year, the New York Society for the Promotion of Agriculture, Arts, and Manufactures addressed a circular letter to the friends and promoters of rural economy which included a number of questions. This, according to Hough, was the first attempt to procure statistics relating to forest products in New York. One of the questions asked was:

In parts of the country where wood grows scarce, would it be proper and profitable to raise in nurseries and transplant hickory, chestnut, beech, ash, and other trees for fencing and fuel? Or would it be advisable to make hedges of whitethorn, prim holly, yew, or other shrubs?—and cultivate peat and turf for making fires?²⁰

¹⁸ *American Husbandry*, 1:83, 156-157 (London, 1775). Quoted by Jenks Cameron, *The Development of Governmental Forest Control in the United States*, 120 (Baltimore, 1928).

¹⁹ Quoted by Rodney H. True, "The Early Development of Agricultural Societies in the United States," *Agricultural History Society Papers*, 3:298 (Washington, 1925).

²⁰ Hough, *Report upon Forestry*, 434.

Four years later, the New York Society published a report on the "best mode of preserving and increasing the growth of timber,"²¹ probably because a wood shortage was becoming manifest, and "the committee reported in favor of devoting the lands least valuable for agriculture to the growing of trees, and they should be stocked for this purpose."²²

In 1804 the Massachusetts State Society for Promoting Agriculture offered premiums to persons who produced from seed the best growth of specified trees, and thereafter an active interest in forest planting continued in Massachusetts for many years. Firewood was cut regularly and in large amount along the Maine coast to supply the needs of Boston and other towns in its neighborhood, and the State had become a heavy importer of wood for other purposes—a condition which spurred the efforts to produce timber within the State through plantings. In 1837, provision was made for a special survey of the trees and shrubs, "keeping in view the economical relations of the inquiry, and having for a principal object to promote the agricultural benefit of the commonwealth, by leading the owners of land to a consideration of the importance of continuing, improving, and enlarging the forests of the State."²³

On April 22, 1817, the *Connecticut Courant* published a communication from Noah Webster on the necessity of curtailing the consumption and increasing the production of wood, with special reference to firewood. Another communication which appeared in the same paper two years later ascribed the increase in the value of woodland "in late years" to "the improvident destruction of timber," coupled with the fact that fuel was "a necessity of life."

In the same year, Governor Walcott of Connecticut told the legislature that the taxation of woodlands "ought to have ref-

²¹ B. E. Fernow, *A Brief History of Forestry in Europe, the United States and other Countries*, 468 (rev. and enl. ed., Toronto and Cambridge, Mass., 1911).

²² N. H. Egleston, "The State of Legislation in Regard to Forests," *American Forestry Congress, Annual Meeting, Proceedings*, 4:58-63.

²³ Hough, *Report upon Forestry*, 403.

erence to the remote periods at which the income will be received; it being certain that an excess taxation would accelerate the destruction of timber and wood, and occasion ruinous mischief."²⁴

By the 1870's, stoves, railroads, and coal had completely altered the situation. The problem of fuel supplies lost its importance, and lumber became the primary concern. Improved methods of production substituted big mills supplying a national market for local mills sawing logs from adjacent woods to meet the requirements of nearby customers. From the white-pine forests of the Northeast, the ever-enlarging lumber industry swept into the Lake States. Settlement of the prairies and plains created a vast new demand and accelerated the exploitation of the Great Lakes forests. The pace was so fast and the devastation so spectacular that alarm spread. Men began to talk of a denuded country and a general timber famine as imminent possibilities.

Fortunately counteracting forces were also developing. The romantic movement in literature was awakening a sense of the beauty of nature and an appreciation of the wilderness. More and more, people regretted and resented the devastation wrought by large-scale lumbering enterprises. The migrants to the Great Plains missed the forests which they had left behind and had difficulty in supplying their wood needs in the treeless land.

Perhaps of first importance was the profound effect on thinking men of the ideas from abroad concerning the relation of forests to climate, floods, and water supplies. European geographers and other scientists of the highest eminence were finding the cause of the rise and fall of nations and civilizations in forest denudation. The dependence on tree growth of the habitability of a country, the continued productivity of its farms, the flow of its streams and rivers, the movement of its water-borne inland commerce, and the protection of its people against the scourges of floods, droughts, desiccation, and tempestuous winds shortly became accepted as articles of faith. Conquest of the treeless plains, it was believed, was contingent on their afforesta-

²⁴ Quoted by R. C. Hall, "The Forest-Tax Problem and Its Solution Summarized," U. S. Department of Agriculture *Circular 358*, p. 3 (Washington, 1935).

tion on a scale that would ameliorate the climate, increase the rainfall, and make agriculture and a substantial population possible.

DIFFICULTIES IN FRAMING A PLAN OF ATTACK

It was one thing to become persuaded that something should be done to assure future forests, but quite another to formulate and rally sufficient backing for a practicable program. Furthermore, success was dependent on some sort of collective action in an era of rampant individualism, before the function and capacity of government had been developed to serve as an efficient tool of public service in new fields, and at the very time when the spoils system and governmental corruption had reached unprecedented dimensions and undermined public confidence. Both Federal and State land policies looked exclusively to disposal as the means of obtaining economic development and use, and a furious scramble was on to amass private wealth. One may wonder that those who sought public action toward solving the forest problem made as much headway as they did.

It was primarily due to Carl Schurz, Secretary of the Interior under President Hayes (1877-81), that a policy of Federal reservation and administration of the public timberlands was set up as an objective.¹ This led in time to the passage of the law of 1891 which authorized the President to establish forest reservations. The German-reared Schurz knew what the actual practice of forestry comprised.² He tried to get Congress to give him authority to stop the disposal of the public-domain timberlands and to put them under an administration designed to keep them productive as permanent Federal forest properties.³ Considering the time, the proposal was audacious, and even if Congress had chosen to sanction it, a successful outcome would have been impossible. Nevertheless, it gave the forestry movement of Schurz's period an objective that was sound in conception, and it eventually led to enactment of the measure which was the real starting point of forestry as we know it today.

The proposal was audacious in its assumption that the Federal Government would be able to command and apply the technical

knowledge and skill necessary to use and at the same time maintain forests as productive properties. Forest management is no simple matter. A virgin forest represents a balance of forces which have reached an equilibrium through their interplay over a long period of time. These forces are partly those which pertain to the forest itself as a living community—that is, as an ecological association or complex comprising both flora and fauna—and partly those exerted by environment. When civilized man begins to use the forest, no matter how lightly, as a source of wood supply, he upsets the equilibrium. Some types of forest are relatively stable, resisting interference and strongly tending to maintain their original composition; some fight hard to hold possession of the ground but undergo marked changes in character as they struggle for a new equilibrium; and others easily succumb and give place to new types of vegetation. The practice of forestry demands an understanding of the life of the forest with all its complexity of interacting forces, internal and external, sufficient to enable the forester to direct its course as he uses its products and services—to mould the forest into a designed form over a long period of time. Despite the fact that civilized man had been living in contact with and using the forest in the eastern United States for more than two hundred and fifty years, during which he had greatly altered its character and serviceability, and despite the fact that native good sense and observation had produced a certain amount of home-made forestry in some parts of the country, Schurz was certainly optimistic if he believed that he could have found a body of men who were capable of assisting in carrying out his proposal.

Even more audacious was the assumption that men could have been found who possessed integrity enough not to sell out the public interest for their own gain, and brains and energy enough to run successfully a large-scale public enterprise of forestry as a business undertaking. A few weeks after the House of Representatives received the Colorado memorial previously mentioned, George F. Hoar of Massachusetts stood before the United States Senate as one of the House managers in the impeachment trial

of William W. Belknap, the Secretary of War. In addressing that body, then sitting as a court, Hoar said:

My own public life has been a very brief and insignificant one, extending little beyond the duration of a single term of senatorial office. But in that brief period I have seen five judges of a high court of the United States driven from office by threats of impeachment for corruption or maladministration. I have heard the taunt, from friendliest lips, that when the United States presented herself in the East to take part with the civilized world in generous competition in the arts of life, the only product of her institutions in which she surpassed all others beyond question was her corruption. . . . When the greatest railroad of the world, binding together the continent and uniting the two great seas which wash our shores, was finished, I have seen our national triumph and exultation turned to bitterness and shame by the unanimous reports of three committees of Congress—two of the House and one here—that every step of that mighty enterprise had been taken in fraud. I have heard in highest places the shameless doctrine avowed by men grown old in public office that the true way by which power should be gained in the Republic is to bribe the people with the offices created for their service, and the true end for which it should be used when gained is the promotion of selfish ambition and the gratification of personal revenge.²⁵

Reference has already been made to the great influence of Marsh's *Man and Nature* on the early forestry movement. The article by the Reverend Frederick Starr on "American Forests; Their Destruction and Preservation" which appeared two years later had a similar message. Both authors presented in strong terms the urgent necessity for prompt action to conserve and renew the forests of the country, and both held it hopeless to expect anything effective on the part of the Federal Government along lines requiring capable and continuous performance, expert guidance, and stable policy. Marsh said:

It is much to be feared that even this measure [government ownership and management] would be inadequate to save the forests of the American Union. There is little respect for public property in America, and the Federal Government, certainly, would not be the proper agent of the nation for this purpose. It proved itself unable to protect the live-oak woods of Florida, which were intended to be preserved for the use of the navy, and it more than once paid contractors a high price for timber stolen from its own forests.²⁶

Starr, who believed the chief immediate need was the inauguration of extensive and carefully planned experimental research

²⁵ *Congressional Record*, 4 (7):63 (May 6, 1876).

²⁶ Marsh, *Man and Nature*, 233.

in order to find out how to manage forests and how to establish successful and paying plantations, held that:

This subject should receive the immediate attention of our government, and enjoy its fostering care. . . . There are certain objections against the government attempting such experiments itself. . . . The experiments, to be of any value, must be continued through several presidential terms; and in the continual changes . . . no one person would be permitted to control these experiments, to carry out to completeness thoroughly digested theories and test them in actual practice, and to avail himself of his own experiences. . . . The liability would be a defeat, through incompetence or lack of interest in the men appointed to the work, from the short periods with which they would be connected with it, and the fact that they had no personal interest at stake in it except their salaries.²⁷

Instead, he proposed a private corporation, operated under government auspices and subsidized with land grants.

Again, in 1873, Hough in his paper on "The Duty of Governments in the Preservation of Forests" pointed out that the questions involved "are not limited to a particular state, but interest the Nation generally," and suggested bringing the necessity of protecting, cultivating, regulating, and encouraging forests to the attention of the several State governments and of Congress with respect to the Territories. Following his appointment to the Department of Agriculture, he wrote in the same vein:

Where a government is administered by officers elected by the people, and where any citizen may be chosen to any office, and especially where these offices have a patronage that makes them especially desirable, they become at once objects of political ambition. Special qualifications for particular stations in public life afford no promise of employment, nor of continuance if employed, and hence we have no inducements to offer a young man who might aspire to a position for which he might have great native ability, and for which he would be willing to undertake the most thorough special education if he felt assured that employment would depend alone upon the most thoroughly approved preparation, or the most rigid examination. Hence it cannot, at least at present, be expected that our governments can undertake the practical management of forests, as is done in Europe, by officials specially trained for this pursuit, with the view of deriving a benefit from the cultivation.²⁸

The viewpoint of the conservationists of 1876 may be summed up as follows: The Federal Government was thoroughly com-

²⁷ Frederick Starr, "American Forests; Their Destruction and Preservation," U. S. Department of Agriculture, *Report*, 1865, p. 218-219.

²⁸ Hough, *Report upon Forestry*, 8.

mitted to the policy of disposing of the public lands. Their distribution was proceeding in many forms, but particularly through homesteading and grants to railroads and States. No effective effort had ever been made to stop spoliation of the timberlands. It was hopeless to attempt to stem the tide of disposal, and granted that this could have been done, the Government was wholly unequal to the task of administering the lands capably and too honeycombed with corruption to administer them honestly. The rapid growth of corporations had created conditions with which the Government as an agency for the protection and advancement of the general welfare seemed unable to cope. Under the circumstances, the more circumscribed its functions, the better off the Nation would be. As between the Federal and the State governments, the latter at least had the advantage of being closer to the conditions that pressed for consideration. The Nation had never shown any substantial evidence of interest in forest conservation, but the States had given the subject a very considerable amount of attention. Their record was, in fact, striking.

• The concrete accomplishments of the States did not, however, come to very much prior to the time when the Federal Government took the leadership of a new, more vigorous, and better directed movement for forestry—the real thing, this time—following Gifford Pinchot's appointment as chief of the division of forestry in the United States Department of Agriculture on July 1, 1898. The creation of the New York State Forest Reserve in 1885 and the subsequent development of that State's forest policy and similar activities in Pennsylvania and California were the major showings. It is also true that the efforts to promote tree planting in the Plains States bore considerable fruit; and the attention given to forestry in the agricultural colleges increased. On the other hand, the tide of general interest in forestry receded, after its rise in the 1870's and 80's. Why it accomplished so little of permanent importance, in spite of the strong moving forces behind it, is not difficult to understand if the historical setting is taken into account. The meager showing was partly due to inadequate knowledge and fallacious

conceptions, but still more to the fact that the forms of governmental organization then established provided no machinery for the kind of undertakings required.¹¹

That the climate of semiarid regions could be profoundly altered by inducing settlers to engage in timber culture and that deserts must be extensively afforested if they were to be reclaimed for agriculture were of course complete misconceptions. Equally fantastic were the prevalent ideas on the danger of a timber famine, the supposed extent to which denudation was taking place, and the horrible consequences imminent through decreased rainfall, altered stream regimen, and exposure to dry and violent winds. But irrespective of whether the objectives of the early forestry movement were right or wrong, their achievement was impossible because the people of the United States had not then gone far in developing the capacity of government to meet the needs of a complex and highly organized economic life.

Conservation necessitated new concepts of governmental function as well as new agencies and machinery of administration. Not the least of the contributions to the national welfare which have been made through the upbuilding of public activities in forestry has been the successful demonstration, in the face of bitter attack, that difficult new duties requiring an organization with exceptional public spirit, energy, integrity, and wise leadership could be successfully assumed by the Federal Government.

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THE UNITED STATES GRAIN CORPORATION RECORDS IN THE NATIONAL ARCHIVES

With the entrance of the United States into the World War came the problem of getting the utmost from the resources of the Nation. Food, of course, was one of the most basic needs of the Allies, and this fact gave rise, by executive order on August 14, 1917, to the creation of the Grain Corporation under its early title of Food Administration Grain Corporation.¹ Authority for such action came from the Food Control Act of August 10, 1917. This was "An Act To provide further for the national security and defense by encouraging the production, conserving the supply, and controlling the distribution of food products and fuel."² This act had been further defined by an executive order establishing the Food Administration, with which the Grain Corporation was designed to function.³

Herbert Hoover, the Food Administrator, was made chairman of the board of directors of the new corporation, and Julius H. Barnes of Duluth, Minnesota, was appointed president to head the main office which was to be in New York City. As soon as this was done, the grain men who had been called to Washington in anticipation of just such a development, wired their subordinates to collect personnel and begin operations.⁴ The country was divided into fourteen zones, each with a second vice president, except in the case of the New York zone. The latter was eventually absorbed by the central office.⁵

The time was ripe for an organization such as the Grain Cor-

¹ *Executive Order 2681*, Aug. 14, 1917. For a general work on the Grain Corporation, see F. M. Surface, *The Grain Trade during the World War* (New York, 1928); also *The Story of the United States Grain Corporation* (New York, 1920).

² *U. S. Statutes at Large*, 40:276-287.

³ *Executive Order* (no number), Aug. 10, 1917.

⁴ See particularly FA 242A-A1 and FA 244A-A1. Other general files of the zone agents and executives of the Grain Corporation also have letters and telegrams concerning the organization.

⁵ Surface, *Grain Trade during the World War*, 52-57.

poration. By May 1917 wheat prices had reached an all-time peak of \$3.45 a bushel at Chicago; bread and flour quotations had soared to similar heights; and speculation, uncertainty, and the unprecedented buying of the Allies had brought about a rapid demoralization of the grain trade.⁶ Even bread riots were reported in New York City.⁷ Furthermore, the harvests for 1916 and 1917 had been scarcely enough to feed the United States. Finally, there was the additional burden of overcoming the Allied food shortage caused by the curtailment of the usual Russian and Central European sources. Hence, the utmost economical distribution of each bushel of wheat and other foodstuffs was imperative.

To cope with these problems, the Grain Corporation was given an initial capitalization of only \$50,000,000. With this start it was expected that the entire United States market would be controlled and stabilized.⁸ This situation took all the efficiency, tact, personality, and ingenuity which Julius H. Barnes and the other officials could muster.

Nevertheless, throughout the duration of the war, the Food Administration Grain Corporation continued to function with singular success. After the first year of operation, scarcity was no longer the great problem, for the war-time stimulation had brought with it a greatly enlarged acreage of grain crops. This sudden overproduction threatened the market once more with collapse, in spite of the guarantee price for wheat set by Congress. However, the Grain Corporation stood ready to buy from all comers, and through its efforts, maintained a remarkable stability of price levels.

With the end of hostilities there came a need for reorganization. The large accumulations of flour and grain had to be sold.⁹ The programs for the relief of Europe had taken on great proportions, and the period of control under the emergency acts was passed.¹⁰

⁶ *Story of the United States Grain Corporation*, 1-2.

⁷ *Ibid.*, 4.

⁸ *Executive Order 2681*, Aug. 14, 1917.

⁹ *Story of the United States Grain Corporation*, 13, 16.

¹⁰ *Ibid.*, 16-17. For the records, see the classification set-ups FA 230 to FA 231, and FA 261 to FA 266.

Consequently, on July 1, 1919 at the beginning of the new crop year, the Food Administration Grain Corporation was reorganized into the United States Grain Corporation in order to face the peace-time emergencies.¹¹ Not until the fall of 1920 was it considered feasible to end the widespread activities of the Grain Corporation and to take the necessary steps for dissolution, which was finally accomplished by December 1927.¹²

As might be expected, the files and records of the Grain Corporation reach huge proportions. All of the departments and subdivisions had accumulated large masses of correspondence, memoranda, statements, invoices, account books, and other documents arising from the usual routine of business. Furthermore, each of the fourteen zones had gathered a complete record of its business relationships, and the Milling Division of the Food Administration as well as the Wheat Director had added their material to that of the Grain Corporation. This material, now housed in The National Archives, has recently been classified and made accessible to research workers.

The quantity of Grain Corporation records received by The National Archives is enormous and becomes more understandable if stated in terms of everyday experience rather than cubic or linear measurements. The file cabinets containing correspondence and other loose documents, if placed side by side as in an office, would extend over two city blocks, or some 786 feet. There were also a great number of large packing boxes which averaged 3 feet long, 2 high, and 1½ wide. These, if placed side by side so as to take up the least possible space, might well extend over a block in length, or approximately 315 feet. For the most part, they contained the account books of the corporation. Finally, another 162 feet is formed by the card-file cabinets, averaging two drawers wide and two high, plus other small containers. This would make a total row of containers almost a quarter mile long. In order to facilitate their use for research, all of these documents have been shelved in modern metal containers according to the system of classification.

In general, the plan of classification reflects the organization

¹¹ *U. S. Statutes at Large*, 40:1384-1353; *Executive Order 3087*, May 14, 1919.

¹² *Executive Order 4791*, Dec. 31, 1927; see FA 232 and FA 233.

of the corporation as far as possible. Thus the departments of the central office were set up separately, as were the zone agencies, the Milling Division, and the various divisions under the Wheat Director. Within each unit, the internal organization is shown by allocating the proper documents to their particular subdivision or department. All of this is indicated by the numbering scheme adopted for the collection of papers. For example, the "Register of Shipments, August 1918-October 1919," for the Chicago agency has the classification number FA 242C-A22. The first two letters, "FA," indicate that the register is part of the general collection of Food Administration material; the number "242" is the one assigned to the Chicago agency; the letter "C" stands for the "Traffic and Transportation Department"; while "A" is the general group called "Records of Shipment," and the final "22" is used to indicate the relative numerical position of the documentary unit, technically known as a series, within the group. In this way the register is placed in its exact relationship to the whole collection of which the records of the Grain Corporation form a part.

Within the general group, the documents are arranged in a sequence designed to show the usual routine of activity and the normal usages of the office under consideration. This procedure has been found to be vastly superior to the ordinary chronological or alphabetical lists. It not only reduces the amount of searching necessary to locate an item, but it indicates at a glance the connection of one series of documents with the others within the group. Furthermore, this makes the entire classification scheme reflect the filing and entry systems adopted by the various offices. For example, the usual order for grains was as follows: wheat, rye, barley, corn, and oats, with the milled products in the same order and miscellaneous products such as meats, fats, and canned goods last. This, then, formed one of the bases for the classification scheme.

The wealth of historical data to be found in the Grain Corporation collection is best illustrated through reference to a few of the documents. These serve only as an indication of the types of material, for a comprehensive survey would require much

more space than can be given in one short article. However, the possibilities for research become evident from the sampling given below.

Of primary importance to the average historian are the voluminous correspondence files which measure literally thousands of inches. Their series bulk among the largest in the collection. Besides letters dealing with the usual matters of business, the value of which should by no means be underestimated, there are the intimate, highly informative communications which were concerned with the policies and administrative decisions of the corporation. Sidelights on many of the important figures in public life during the period are found in the files. They also mirror the personalities, struggles, ambitions, and often much of the private lives of the men who constituted the United States Grain Corporation. Of the correspondence collections, one of the most valuable for data on administration and policy is the "Correspondence with Zone Agents" of the Files and Agreements Department, and for general information, the best probably is the central correspondence file, called "Central Files," of the Bureau of Information.¹³ For the closing period of the Grain Corporation, E. M. Flesh's "General Correspondence" is of outstanding importance.¹⁴

Of a somewhat similar nature is the rather ubiquitous file known as the "General File of F. S. Staley" from the Office of the Comptroller.¹⁵ Besides many important facts concerning payroll and personnel as well as summaries and reports, there are such informative documents as Staley's personal notes taken during his tour of inspection to the various zone agencies. These are candid, searching, and shrewd, and consequently act as valuable checks against the less impersonal correspondence series dealing with the relations between the zones and the central office. Staley's files, to be sure, should be used together with those of Leslie, Banks and Company, who audited the books of the Grain Corporation.¹⁶

¹³ FA 209-A2 and FA 221-A1.

¹⁴ FA 232-A1.

¹⁵ FA 206-A8.

¹⁶ FA 234.

Office diaries found in the collection are of great assistance in determining business activities and methods. One of the most important is that of the cashier, J. J. Rick, while that of H. F. Simpson is perhaps the most complete.¹⁷ Other diaries of interest are found throughout the correspondence files of the various executives.

For the economist, or for those interested in specific and exact data on certain financial transactions, there are the accounting records. These include every type of record from the first offer of grain or notice of a shipment to the general ledgers and final exhibits of the corporation. Prices, fees, commissions, practices, and volume of business are carefully filed, recorded, and summarized in the papers, vouchers, and books of the corporation.¹⁸

In the matter of statistics for the movement of grain during the World War, few if any sources could equal the Grain Corporation records. All the elevators and mills reported regularly on every bushel of grain which went through their hands. In this way the exact condition of the market for the entire country as well as for each locality was known to the officials of the corporation. From these reports were made summaries and recapitulations ranging from comparisons of different parts of the country to comprehensive analyses of the Nation as a whole. The records of the elevator and mill transactions kept by the Minneapolis agency well illustrate the lengths to which the Grain Corporation went in order to obtain valid statistics.¹⁹

Of particular interest to those who are concerned with the development of agricultural processes are the records from the offices of the Crop Experts and the Grain Threshing Division.²⁰ Not only is it possible through these sources to discover the conditions in the elevators and warehouses and the efficiency of the existing threshing technique but also the extent to which expert advice made itself felt in these fields during the World War.

Finally, there are such special types of material as the exten-

¹⁷ FA 214-B1 and FA 209-A1.

¹⁸ See particularly FA 213, FA 215, FA 222, FA 223, FA 225, FA 226, and FA 227.

¹⁹ FA 244E-A1 to FA 244E-H3.

²⁰ FA 216, and FA 217.

sive newspaper clippings which give the press reports concerning the Grain Corporation as they appeared throughout the country.²¹ Topics ranging from the disposal of surplus stocks of flour to the presidential candidacy of Herbert Hoover are covered in these press notices.²² The value of such files as clues to newspaper sources is very great.

In understanding the war-time period, this collection of documents now in The National Archives should prove to be very useful. So fundamental a matter as the feeding of nations under the stress of war can never be omitted in a comprehensive account of the times. Questions dealing with the confiscated German ships, the flow of Canadian wheat, the governmental control of the railroads, and the attitude of the judiciary concerning certain aspects of Federal control of industry are all dealt with in the records of the Grain Corporation.²³

Contemporary opinion of the activities of the organization ranged from hot protest and dislike to unstinted praise and complete satisfaction. Some were pleased; some amused; others annoyed or thoroughly bewildered, as witness the following letter, dated July 8, 1919, received by the Wheat Director:²⁴

My dear friends:

I wish to state to you very plainly I am only running a little old fashion Corn and Rye mill for Farmers use only. There is a Big Roller mill 3 miles from me Mr. Elexander Mills on RFD 2 who grind all the wheat only sometime wheat unfit or Refused rotten unfit for flour use is the only wheat we ever grind on our little old fashion Water Corn and Rye mill Mr. Elexander mill a Roller mill 3 miles of us on RFD 2 He is running a Big mill and gets all wheat in and arround for 10 miles squiar Farmers pass on by our little old water Corn & Rye mill and take all wheat to Elexander mills on RFD #2

²¹ FA 211-D1 to FA 211-D6.

²² FA 211-D6.

²³ Information on these subjects is found generally throughout the records of the Grain Corporation, the Wheat Director, and the Milling Division. Of particular interest in regard to German ships are FA 228, FA 230, FA 222, and FA 219. For records covering Canadian wheat, see FA 191-A2; for the railroad problem, see FA 219; and for the judiciary question, see FA 242A-A5.

²⁴ FA 192A-A1. This theme is found throughout the correspondence files. See also *Conference of Trade Representatives with the United States Wheat Director, Julius H. Barnes, New York, June 10-11, 1919.*

Dear Friends I have been troubled by Paper and Letters so mutch untill I have lost my Nerves. I get 2 and 3 letters per day from the St. Louis Mo. House 424 Boatmens Bank Bdg I am not able to pay so mutch postage on letters and Reports . . . which is of no use for a little old Rye and corn mill like mine Some days we grind a bushel of Corn or Rye or rotten wheat mixed in Rye that Elexander Roller mill Refuse to grind on their mill on RFD #2 Now Friends I am telling the truth and I cant see for my life why it is they Trouble me so mutch with Letters and Reports—and why is it a Little old water mill on a Creek Branch only a Rye and Corn mill has to have Licenses can you tell me? Do such have to have a licenses to run this little Rye and Corn mill (I want you to inform St Louis on this) as I am tired of so mutch writeing. . . .

yours Truly
[signed] J. J. Lindsey

(I need no Licenses).

On the whole, however, there seemed to be general satisfaction over the way in which the United States Grain Corporation conducted its affairs. Its results could be measured in such tangible terms as the degree of stability which was maintained in the price of all grains and grain products and in the financial success of the organization. The task had been great and the goal worthy of the best efforts of the personnel, and the success of the venture is a lasting tribute to those who worked to stabilize the grain trade.

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TRAFFIC IN FARM PRODUCE IN EIGHTEENTH-CENTURY ENGLAND

EXCEPT LIVESTOCK AND LIVESTOCK PRODUCTS

A study of agricultural production in eighteenth-century England shows how nearly impossible it is to get an adequate idea of the volume of trade in that general period.¹ The only reliable figures are those dealing with imports and exports, and it is unnecessary to quote them as they are readily accessible.² The trade with foreign countries has been completely dealt with by several scholars, and the mechanisms of buying and selling have been well covered.³ This article is, therefore, largely confined to a description of the traffic in farm produce, except livestock and livestock products, between the places where surpluses were produced and the places where they were consumed.

With the exception of livestock, farm produce is immobile, and, if taken to market, it must be carried either by water or along such roads as are in use. The quality of eighteenth-century English roads is well known, and it is unnecessary to describe them here. The chief immobile products were the cereals, with butter and cheese running a close second, and the supply of London was the dominating factor of the internal trade in these foodstuffs.

A contemporary authority estimated that London required about 370,000 quarters of corn annually at the middle of the century,⁴ and this amount may be taken as a fairly close approximation if we consider the probable population and allow a

¹ G. E. Fussell, "Population and Wheat Production in the Eighteenth Century," *History Teachers' Miscellany*, 7 (5):65-68, (6):84-88, (7):108-111, (8):120-127 (1929).

² Cf. William Cunningham and other modern writers.

³ R. B. Westerfield, *Middlemen in English Business particularly between 1660 and 1760* (New Haven, 1915).

⁴ William Maitland, *History of London*, 2:756 (London, 1756).

slightly higher per capita consumption than that of modern times. Owing to the condition of the roads and the inadequacy of pack animals for transporting bulky commodities, most of the traffic was water borne. It either formed part of the coastal trade or came down the navigable rivers to the coast and was thereafter sea borne. Then as now, East Anglia supplied large quantities of cereals, and the Midlands, where accessible to rivers and later to canals, added to the supply. The Thames Valley was also drawn upon, because its river system allowed easy transport and the south-coast counties could add to the volume of the trade by shipments from their ports.

According to the oft-quoted Daniel Defoe, Norfolk, "*as are all the Counties so near the Coast, is applied chiefly to Corn, of which a very great Quantity is continuously shipped off for London,*" and sometimes to Holland.⁵ Lynn was the chief port on this part of the east coast. It was on a river system navigable to Northampton, and it supplied six inland counties wholly and three more in part with most commodities.⁶ The cereals and other products of these counties were brought by the same means to Lynn for sea transport to London and elsewhere. The district then drawn upon is best described by following the delineations of a contemporary.⁷ The Ouse becomes navigable at Bedford through Huntingdon, Cambridge, and the Isle of Ely to Norfolk where it reaches the sea at Lynn. It receives in its course the Nene from Northampton and Peterborough, the Cam from Cambridge, the Lesser Ouse from Norwich, and the Mildenhall from Suffolk, and all of them were navigable rivers. The produce and manufactures from all these places were sent to Lynn and thence to London. In return, coal was brought from Newcastle and goods of various kinds from London and other

⁵ Daniel Defoe, *A Tour Through the Whole Island of Great Britain* . . . , 1:66 (London, 1724).

⁶ Samuel Simpson, *The Agreeable Historian*, 644 (1746); Malachy Postlethwayt, *Universal Dictionary of Trade and Commerce*, 2:349.

⁷ John Campbell, *A Political Survey of Britain*, 1:138 (London, 1774). Cf. Clement Cruttwell, *A Tour Through the Whole Island of Great Britain*, 1:cxvii-cxxviii (London, 1801).

ports of the east coast. Lynn also had dealings with Spain and Portugal, Holland, and the Baltic region.

Toward the end of the century, the barley of Norfolk went to the ports, but its wheat was bought by the millers and sent to London as flour, although some grain still went to Bear Key, and corn was taken down the Yare to Yarmouth for London or by land to Cromer and Mundesley. When the ports were open, there was still export to Holland and other countries.⁸ At that time, the corn exported from Norfolk was supposed to equal that of the rest of England, but some of the supplies sent out came from Suffolk and the Midlands down the Ouse. The following figures are a gauge of the trade:⁹

	Wheat		Barley		Malt	
	Quarters	Bushels	Quarters	Bushels	Quarters	Bushels
1781	8	3	14,605	3	98,315	1½
1782	2,662	3	19,748	7	73,631	1½
1783	5,701	2	3,638	5	45,582	
1784	26,403	2	10,795	4	43,394	7
1785	13,880	4	31,053	3	86,795	7
1786	28,849	4	11,224	7	79,458	7

The wheat-export figures in the county report on Norfolk show to some extent the routes taken by the trade.¹⁰ Admitting that some of the supplies came from Suffolk and the Midlands, the author said that the four ports sent out the following quarters of wheat: Yarmouth,—22,466; Lynn,—30,016; Wells,—4,186; Blackeney and Clay,—6,378.

At the beginning of the century, grain was sent from Northampton to Wisbech and Spalding and thence to Bedford and Warwickshire, but by 1712 the amount was decreasing. Some went north to Derby, and at the end of the century, this part of the trade was still carried on. The quantity of wheat and flour exported, though known to be very large, could not be estimated because the best was carried overland, and no account was taken

⁸ William Marshall, *The Rural Economy of Norfolk*, 1:195, 197 (London, 1787).

⁹ *Accounts and Papers*, 77:438 ff.

¹⁰ Nathaniel Kent, *General View of the Agriculture of the County of Norfolk*, 147-150 (London, 1796).

of it. Wheat was sold to the local millers who disposed of it in Leicester, Nottingham, and Warwick, great quantities being sent down the Nene to Wisbech.¹¹ There was a great trade on the Trent through Nottingham to the east coast, and some corn may have been drawn from as far away as Stafford.¹² At the same time, some of the wheat from the Midlands was obviously required by the growing manufacturing population of Birmingham and its neighborhood, and the millers purchased the corn for this market.¹³ The wheat and barley of Bedford also found its way down the Ouse to Lynn for export to Holland. The barley was often sold in London and other parts for Hertfordshire, and the wheat from around the town of Bedford was carried by wagon twenty miles to Hitchin and Hertford, where it was bought by millers, ground, and sent on to London.¹⁴ As early as 1721, the River Lea was navigable by barge to London, and corn was taken down and coal carried back. The county had a large number of maltsters, millers, and dealers in corn, who frequented the chief market towns to trade in wheat, barley, and other grains, not only from the local shire but several others as well.¹⁵ For instance, barley from Cambridgeshire was sold at Ware and Royston, the great malting towns of Bedford.¹⁶

The district to the south and southeast of York had the reputation of being fine farming country. Moreover, as navigable rivers were "twisting into every corner, this country is well situated for shipping of corn to London or other distant markets."¹⁷ The area tapped by these rivers is extensive. The

¹¹ John Morton, *The Natural History of Northamptonshire . . .*, 16 (London, 1712); James Donaldson, *Agriculture of Northampton*, 47 (Edinburgh, 1794); William Pitt, *General View of the Agriculture of the County of Northampton*, 226-227 (London, 1809).

¹² Robert Lowe, *A General View of the Agriculture of the County of Nottingham*, 136, 138 (London, 1798).

¹³ William Marshall, *The Rural Economy of the Midland Counties*, 1:188 (London, 1796).

¹⁴ Simpson, *Agreeable Historian*, 1:2; Postlethwayt, *Universal Dictionary*, 1:229-230. Cf. Defoe, *Tour*, 2:170.

¹⁵ John Senex, *A New General Atlas*, 205 (London, 1721); Simpson, *Agreeable Historian*, 2:252; Campbell, *Political Survey of Britain*, 173-174.

¹⁶ Defoe, *Tour*, 1:118.

¹⁷ Charles Varlo, *A New System of Husbandry*, 3:117-118 (York, 1770).

Derwent passes Malton above which it was navigable by 1774 in consequence of a late statute. The Swale from Richmond, the Eure from Rippon and Boroughbridge, the Wherfe from Wetherby and Tadcaster, the Aire from Leeds, the Calder from Wakefield, and the Don from Doncaster and Rotherham all carried corn and other goods to the Ouse and thence into the Humber. By that time the Beverley Cut had been restored and made navigable again, so that a large farming area was served by the port of Hull which shipped corn to Holland, Hamburg, the Baltic, France, and Spain, as well as London. By the same water courses, Hull also handled lead from Derby and Nottingham, cheese from Stafford, Warwick, and even Cheshire, and cloth from the growing local manufactures.¹⁸ It was an advantage to the buyers of export wheat that the manufacturers of Yorkshire preferred oaten bread as the demand over local production was supplied by imports via the same system.¹⁹ Toward the end of the century, the export of wheat from Stockton-on-Tees was said to be declining because the lands of the neighborhood had been enclosed and thereafter cropped until exhausted and then laid down to grass. Probably the increasing population in the district also played some part in the decline.²⁰ The requirements of Newcastle-on-Tyne and its colliery and manufacturing population were supplied from its environs. At the weekly market on Saturday, there were a "great number" of carts in the streets, laden with wheat and oats, chiefly the latter, but there was no barley as very little was grown in Northumberland.²¹

Similarly the growing population of Lancashire made increased demands for corn. Barley and malt were brought overland from

¹⁸ Campbell, *Political Survey of Britain*, 172-174; Postlethwayt, *Universal Dictionary*, 1:140, 2:849.

¹⁹ William Marshall, *The Rural Economy of Yorkshire*, 2:22, 256-257 (London, 1788); Arthur Young, *Annals of Agriculture*, 28:254 (Bury-St. Edmund, 1797); John Aikin, *A Description of the Country . . . round Manchester*, 574 (London, 1795).

²⁰ John Brewster, *The Parochial History and Antiquity of Stockton-on-Tees*, 69 (1796).

²¹ Alexander Dennis, *Journal of a Tour through . . . England and Scotland in . . . 1810*, p. 98 (1816).

Wirkop and Mansfield in Nottingham to Stony Middleton where it was collected by the Manchester carriers.²² They were also carried along the new canal system and the navigable rivers, and to Cheshire, Derby, and Lancashire. The breweries at Newark were said to vie with those of Burton in the Baltic trade. Road improvements had made this trade possible, and by the end of the century, the wagon routes to Kendal and Westmoreland generally enabled that county to get goods from London quicker than by the long sea journey to their own ports.²³ The net product of grain from Cheshire also went to Lancashire, Manchester, Stockport, and Matlock. The oats grown in Cheshire were ground into meal and consumed in the northeast part of the county and southern Lancashire. Barley also came from Derby, although much of this county's malt went to Burton-on-Trent for the well-established breweries. The Preston market drew "great quantities" of meal and shelled groats from the Filde district for local consumption by the poor in making the oaten bread known as jannock.²⁴

It was only natural that London should draw the output of Essex, Kent, and the southeastern counties. The Maidstone district was very fertile, and its produce, rising from 4 to as much as 8 quarters an acre, was sold to millers or corn factors by sample for the London market. Part of it was taken to the ports by wagon, but no doubt some was taken to Maidstone by the tidal Medway which was capable of conveying barges of 50 tons.²⁵ Corn grown in the Isle of Thanet was chiefly exported from Margate to London where it was sold for ready money in the market. The barley sent to London was estimated at 20,000 quarters, in addition to what was shipped to other places.²⁶

²² William Bray, *Sketch of a Tour into Derbyshire and Yorkshire*, 174 (ed. 2, London, 1783).

²³ Cruttwell, *Tour*, 1:cl; Brewster, *Parochial History*, 69.

²⁴ Aikin, *Description of the Country . . . round Manchester*, 45, 70, 286.

²⁵ William Marshall, *The Rural Economy of the Southern Counties*, 1:121-122 (London, 1798); Pierre Jean Grosley, *A Tour to London . . .*, tr. by Thomas Nugent, 17 (1772); Campbell, *Political Survey of Britain*, 154.

²⁶ *The Margate Guide*, 8 (1780); Benjamin Martin, *The Natural History of England*, 1:198 (1759).

In a good year, corn of all kinds grown in the Isle of Sheppey and exported from Faversham amounted to 40,000 quarters.²⁷ The south-coast ports, including Chichester and Southampton, also exported wheat, flour, and malt.²⁸ In Defoe's time, Farnham in Surrey was the greatest corn market in England not excepting London. As many as 11,000 wagons or carts, each carrying a load of 40 bushels were seen there in one market day, and much of its corn was taken to Guildford for grinding. As many as 250 and sometimes 400 loads came from Hampshire in one day. The product went by barge from Guildford to London.²⁹ The Isle of Wight was prolific in corn, and most of the topographers repeated the legend that it grew enough in one year to serve its home consumption for seven. One source even suggests that the harvest of one year would supply the needs for twelve. Another account repeats this statement but adds that the average exports for the three years prior to 1747 were 8,374 quarters of grain and 11,751 quarters of flour, exclusive of the amount sent to Portsmouth, Southampton, and Lymington. The product was collected at Newport where a hundred laden wagons might sometimes be seen in the market place, and shipped from Cowes.³⁰

The Thames formed a natural waterway on which the heavy produce of the southern midland counties could be transported to London. In the last quarter of the century, the river was connected by canals with Bristol and Bath, and thus reached other previously not readily accessible districts.³¹ Before then, it was navigable from Lechlade for very large barges, and since

²⁷ Thomas Pennant, *A Journey from London to the Isle of Wight*, 1:96 (London, 1801).

²⁸ Martin, *Natural History of England*, 1:159; Simpson, *Agreeable Historian*, 3:974.

²⁹ Defoe, *Tour*, 1:82, 87; Senex, *New General Atlas*, 198; Simpson, *Agreeable Historian*, 3:973.

³⁰ Pennant, *Journey from London to the Isle of Wight*, 2:153, 157-158; William Gilpin, *Observations on the Western Parts of England . . .*, 303-304 (ed. 2, London, 1808).

³¹ George Cadbury and S. P. Dobbs, *Canals and Inland Waterways*, 10 (London, 1929). Cf. P. J. Mantoux, *The Industrial Revolution in the Eighteenth Century . . .*, tr. by Marjorie Vernon, 124-128 (London, 1928).

it has eleven tributaries which were then navigable, while six more were not, it afforded large facilities for transport. It was enthusiastically asserted that the Thames was navigable for nearly 100 miles from its mouth.³² Brentford apparently formed one of the stages in the journey to the markets of the metropolis, "a considerable trade in corn, malt, and other commodities" being carried on by means of the Thames.³³ This produce, however, must have been derived from much farther afield. The chief trade of Henley, for instance, was in malt, as 300 cart loads of corn were often sold on a Thursday market day at the beginning of the century. The inhabitants of the town were generally bargemen who carried corn and wood to London and picked out "to themselves a very comfortable subsistence."³⁴ Newbery and Reading sent large quantities of flour to London and Abingdon; Wallingford and Windsor supplied barley and malt.³⁵ Like Henley, the chief trade of Oxford was in malt conveyed in barges to London.³⁶ However, the business of buying and selling corn in this district was not without its occasional excitements, especially when there was indignation at the high prices which were assumed to be due to the action of monopolists. Although it cannot be supposed that such just retribution on a profiteer always took place, the following story is repeated for the lurid light that it throws on the habits of the time.³⁷

Old Mobb being at Abingdon, where a great market is kept for corn, he lit into a person's company at the Crown Inn there, whom he knew to be a great ingrosser [monopolist] of corn, and had bought then as much of that commodity in the

³² Mantoux, *Industrial Revolution in the Eighteenth Century*, 123-135; Campbell, *Political Survey of Britain*, 139.

³³ Archibald Robertson, *A Topographical Survey of the Great Road from London to Bath and Bristol*, 1:37 (London, 1792).

³⁴ John Ogilby, *The Traveller's Guide*, 29 (1699); James Brome, *Travels over England, Scotland and Wales*, 107 (London, 1700).

³⁵ Cruttwell, *Tour*, 1:xxx-xxxi, derived from William Pearce, *General View of the Agriculture of Berkshire*, 38 (London, 1794).

³⁶ M. Sturge Henderson, *Three Centuries in North Oxfordshire*, 108 (Oxford, 1902), citing the *Town and Country Magazine*, April 1773, p. 176.

³⁷ Captain Alexander Smith, *A Complete History of the Lives and Robberies of the Most Notorious Highwaymen, Footpads, Shoplifts, & Cheats of Both Sexes, 1719*, ed. by Arthur L. Hayward, 40-41 (ed. 5, London, 1926).

market as cost £50, which Old Mobb bought of him again, and paid him eighty pounds ready money, as liking it (as he pretended) better than any he saw there that day. The corn he sent away where he knew how to dispose of it quickly again, though under price; and understanding which way the man went the next morning, of whom he bought the corn, he was soon at his heels, and clapping a pistol to his breast, demanded his money again, and what else he had besides. The countryman was in a great surprise, shaking like an aspen leaf, and asked him whether it was justice to take his money from him and goods too? *Hast thou the impudence, quoth old Mobb, to talk of justice, when there's none in the world acts more injustice than an ingrosser of corn? Sirrah, there's no vermin in the land like you, who slanders both Heaven and Earth with pretended dearths, when there's no scarcity at all. Thou spawn of Belzebub! you daily pray for more inclosures, and know no other reason why we call our forefathers days, The time of ignorance, but only because they sold wheat for twelve-pence a bushel. Thou fiend of Hell! Don't you curse tobacco because you say it is a sparer of bread-corn? No picture pleased you so well as Pharaoh's dream of the seven lean kine that ate up the fat ones; that you'll have in your parlour, and commend it to people, with a smothered prayer for the like scarcity. Besides, accounting the poor as the justices' intelligencers, you mortally hate them and complain of our negligence of discovering new parts of the world, only to rid them from our climate. So Mr. Hellhound, talk no more of justice, but deliver your money straight or else I'll send a brace of balls through your head.* Hereupon he delivered him a bag, in which Old Mobb finding his own money and as much more to it, he went away with a great deal of satisfaction.

From Oxford grain was taken to Gloucestershire to supply the demand of its manufacturing population. The markets were Gloucester, Tewkesbury, and, in summer, Cheltenham.³⁸ The corn from Oxfordshire and Berkshire probably went up the Thames, at least as far as Lechlade, and in the later years of the century, along the canal system, but the need was so insistent that wagons also brought supplies from Herefordshire and still more came by water from Upton-upon-Severn.³⁹ The Severn was navigable from Welshpool to the Bristol Channel. The great city of Bristol drew corn from Warwickshire by way of the Avon, from Hereford and Salop by the Teem and the Wye which allowed transport from Radnor as well. The Lugg was also used, and Monmouth and the adjacent parts of Wales used the Usk, while Somerset sent its contribution down the Ivel. The

³⁸ William Marshall, *The Rural Economy of Gloucestershire*, 1:105 (Glocester, 1789).

³⁹ *A Tour to Cheltenham Spa . . .*, 85-86 (Bath, 1783). Cf. John Duncumb, *General View of the Agriculture of the County of Hereford* 63 (London, 1805).

Bristol traders also dealt by land. Chepstow at the mouth of the Wye, was a collecting center for provisions from the adjacent counties for the trade with Gloucester and Bristol.⁴⁰ The Bristol merchants even sent their ships to the opposite coast to take off "great quantities" of the Monmouthshire corn to Portugal and other places.⁴¹ Carmarthen also joined in this trade with oats, and some of its supplies went to London.⁴²

The growing industrial population of the Birmingham area was partly supplied from Worcester where, it was estimated, the cereal subsistence for 60,000 people besides its own inhabitants was produced annually. Part of this was exported coastwise, and some went to the populous parts of Salop and Staffordshire as well as Birmingham.⁴³ At the Coventry market, corn was sold by sample.⁴⁴ Birmingham's supplies were also drawn from Hereford,⁴⁵ and corn was brought by land from Compton to Buckingham, a distance of over 50 miles, as well as from the Vale of Evesham. The country north of Birmingham did not produce its own requirements and depended on the city. Wolverhampton was supplied from Salop.⁴⁶ Sea-borne supplies of barley from the South Hams of Devon were shipped out at Salcomb, and in years of plentiful harvests, Cornwall exported grain to such places as Spain.⁴⁷

By the end of the century potatoes had come to play a fairly important part in the diet of the laborers and were also used to some extent by other classes. The earliest centers of production

⁴⁰ Campbell, *Political Survey of Britain*, 146-147, 177.

⁴¹ Simpson, *Agreeable Historian*, 3:1165.

⁴² Richard Warner, *Second Walk through Wales*, 356 (Bath, 1799).

⁴³ William Pitt, *A General View of the Agriculture of the County of Worcester*, 82 (London, 1810).

⁴⁴ Dennis, *Journal of a Tour*, 37.

⁴⁵ Samuel Ireland, *Picturesque Views on the River Wye*, 58 (London, 1797); Duncumb, *General View of . . . Hereford*, 630.

⁴⁶ Young, *Annals*, 16:537-538 (1791).

⁴⁷ Robert Fraser, *General View of the County of Devon*, 23 (London, 1794). As to Cornwall, see the topographers. For a list, see G. E. Fussell and Constance Goodman, "Travel and Topography in Eighteenth-Century England: A Bibliography," *Bibliographical Society, Library, Transactions* (sec. 4), 10:84-103 (London, 1929).

were Cheshire and the Ormskirk district of Lancashire, and these districts were the first to export this vegetable. The first edition of the County Report on Cheshire states that 100,000 bushels (90 pounds each) were sent annually from Frodsham to Liverpool.⁴⁸ The neighborhood of Warrington also produced them in large quantities and shipped between 30,000 and 40,000 bushels annually from Bank-quay. The Liverpool market was also supplied from Ormskirk and its neighborhood.⁴⁹ The produce of Lancashire was so large that it was able to export to Dublin, and, by the middle of the century, about twenty ships with an unspecified tonnage annually carried potatoes from Liverpool to that city, and in addition exports were made to Gibraltar and many other distant places.⁵⁰ The Midland Counties grew potatoes for Birmingham and the other manufacturing towns and collieries,⁵¹ but the markets of Stafford were supplied mainly by the cottagers with large gardens.⁵² Arthur Young estimated that "perhaps the greatest potato cultivation in the kingdom" lay within 14 miles of London. Probably part of its supply was obtained by coastwise shipping, but a large area near Ilford in Essex was devoted to potatoes for the Covent Garden market.⁵³ The region of Surrey which abuts on London also grew potatoes for this market.⁵⁴ The modern potato-growing section in Lincoln was early in the business, and some of its crop went to London. They were grown at Keale and shipped at Boston.⁵⁵

⁴⁸ Thomas Wedge, *General View of the Agriculture of the County Palatine of Chester*, 18-19 (London, 1794). This statement is repeated in Aikin, *Description of the Country . . . round Manchester*, 414.

⁴⁹ Aikin, *Description of the Country . . . round Manchester*, 306, 362.

⁵⁰ Gentleman in the South of Scotland (Sir Archibald Grant), *The Practical Farmer's Pocket Companion*, 16 (1756).

⁵¹ Marshall, *Rural Economy of the Midland Counties*, 1:202.

⁵² William Pitt, *General View of . . . Stafford*, 68 (London, 1808).

⁵³ Messrs. Greggs, *General View of the Agriculture of the County of Essex*, 14 (London, 1794); Arthur Young, *General View of the Agriculture of the County of Essex*, 1:382 (London, 1807), and *Annals*, 28:101 (1797).

⁵⁴ William Stevenson, *General View of the Agriculture of the County of Surrey*, 291 (London, 1809).

⁵⁵ T. Q., "A Tour in the Midland Counties of England in . . . 1772," *Gentleman's Magazine*, 44:254 (London, 1774).

Of the cider counties, Devon was estimated to export 10,000 hogsheads annually to London as well as to other places, and the product was said to be stronger than that of Hereford. The figure, however, having been mentioned once, was accepted throughout the century.⁵⁶ Hereford also sent cider to London and other parts throughout the century, and the cider export of Gloucester was estimated at perhaps £5,000 per year.⁵⁷

The market-garden requirements of London, like those of other large centers of population, were supplied from its environs. The most distant of these were said to lie within a radius of 12 miles of the city.⁵⁸ The chief center was Battersea, but Gravesend produce was preferred by some people.⁵⁹ Carrots came from Woodbridge in Suffolk, and perhaps other vegetables were sent from the East Anglian ports.⁶⁰ The growing towns of the Midlands were supplied from Evesham, the canals having made it possible to take the produce 30 miles to market.⁶¹ Towns like Liverpool were supplied mainly from the Hundred of Wirral in Cheshire, the market people bringing over the produce by ferry boats, and Nottingham was supplied from 300 acres of gardens and nurseries at Newark.⁶²

There was little trade in fertilizers during the eighteenth century as there were then no artificial manures, and the waste products of the towns were used by the local farmers. The increasing use of lime resulted in some trading in this product, and nearly all the topographers commented on the supplies dispatched from Gravesend and Greenhithe to Essex and the

⁵⁶ Senex, *New General Atlas*, 187; Theophilus Botanista, *Rural Beauties*, 90 (London, 1757); *Description of England and Wales Containing a Particular Account of Each County*, 129 (1769).

⁵⁷ Herman Moll, *A System of Geography*, 33 (1701). Cf. John Clark, *General View of the Agriculture of the County of Hereford*, 39-42 (London, 1794); *Tour to Cheltenham Spa*, 89.

⁵⁸ William Guthrie, *A New Geographical, Historical, and Commercial Grammar . . .*, 174 (ed. 3, London, 1771).

⁵⁹ Postlethwayt, *Universal Dictionary*.

⁶⁰ Young, *Annals*, 2:123-124 (1784).

⁶¹ *Ibid.*, 16:537 (1791).

⁶² Aikin, *Description of the Country . . . round Manchester*, 362; Young, *Annals*, 31:201 (1798).

ports of East Anglia.⁶³ Moreover, the malt wagons from Hertford carried back rags from London which the farmers used as manure.⁶⁴ There was a similar trade in lime and kelp between little ports like Watchet on the Somerset coast of the Bristol Channel and Bristol, and ports on the Welsh coast.⁶⁵ The building of the Basingstoke Canal made it possible to carry chalk, peat, and peat ashes to lands that needed these manures. At Stony Middleton in Derby there were many kilns for burning lime. Carriers with small carts brought loads of slack from Sheffield and Chesterfield and received lime in return which was used at the rate of 40 to 50 loads to an acre.⁶⁶ Cleveland in the North Riding obtained lime from Sunderland, about 20 miles away.⁶⁷ Most of the carriers in the north were smallholders with spare time who thus sought to add to their earnings. "Many of the smaller farmers betwixt Kirby Lonsdale and Kendal," we are told, "earn their bread with carrying coals, during most part of the year, from the pits at Ingleton, Black Burton, or Burton in Lonsdale, to Kendal, and the neighbouring places, for fewel, and burning lime in order to manure their land."⁶⁸ Lime was also burned in various places in Wales for export. The kilns at Caergwryle Hill supplied a "vast trade" into Cheshire.⁶⁹ There were also extensive lime works at Llanymynch and its neighborhood which sent its product by land carriage to Montgomery, Llanidloes, Newtown, and other places.⁷⁰ These data show that the farmers were beginning

⁶³ For the topographers, see Fussell and Goodman, "Travel and Topography in Eighteenth-Century England." Cf. Defoe, *Tour*, 1:10; *The Kentish Traveller's Companion*, 41 (1776).

⁶⁴ N. Salmon, *The History of Hertfordshire*, 1 (1728).

⁶⁵ Botanista, *Rural Beauties*, 277; Richard Warner, *A Walk through Some of the Western Counties of England*, 77, 81, 91 (Bath, 1800).

⁶⁶ Bray, *Sketch of a Tour*, 174.

⁶⁷ John Tuke, *General View of the Agriculture of the North Riding of Yorkshire*, 234 (London, 1800).

⁶⁸ John Hutton, *A Tour to the Caves*, 12 (ed. 2, 1781); Henry Skrine, *Three Successive Tours in the North of England*, 10 (London, 1795).

⁶⁹ Thomas Pennant, *Tour in Wales in 1773*, 1:436 (London, 1784).

⁷⁰ John Aikin, *Journal of a Tour through North Wales and Part of Shropshire*, 6 (1797).

to purchase fertilizers for use in addition to the so-called natural manure of their holdings and also show the growing mobility of heavy goods.

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